

Attachment H

Synopsis of Cleaning Methods by Building Area and Fact Sheets

Basement Areas

Elevator Shaft and Motor Room, Trash Compactor Room, Fire Equipment Room.

Cleaning Method: Test 4A – Surface cleaning using industrial HEPA filtered vacuums. Air filtration using an air filtration device (AFD).

Equipment Used: Nilfisk™ Vacuum (CFM 127)

Filtration status: HEPA

Common Area Size: 642 sq. ft.; 5,136 cu. ft. (Total of all areas, elevator shaft not included.)

AFD Status: Required

AFD specification when required: 400/600 cfm

Unit air exchange rate: 12.8 min @ 400 cfm

Minimum Air Exchange Required: Every 30 minutes

Description: Basement areas include: A trash compactor room, an equipment room containing the building fire protection controls to the ceiling sprinkler system, a motor control room for the elevator, and access to the elevator shaft containing the elevator compartment, as well as a common room which provided access to all the above areas. These basement areas are accessed through an outside stairwell located in the Cedar Street sidewalk.

The floors are constructed of concrete. The walls are composed of painted concrete block or brick. The elevator shaft floor is compacted soil. The shaft walls are composed of mortar and brick. Floor joists and decking of the first floor constitute the ceiling of the basement areas. All basement areas appeared to have been hose washed. No significant dust was present. With the exception of the ceiling materials, no porous materials were present. Debris such as cardboard boxes, used hydraulic oil, rags, discarded elevator parts, and dead rodents were disposed of prior to cleanup. The elevator shaft was inspected from the fifth floor to the below grade location when access was provided by the elevator contractor. The vertical wall surfaces of the shaft were constructed of brick and mortar and presented no visible dust down to the second floor. The lower section in the elevator shaft contained sand accumulation from natural deterioration. The exposed brick under the elevator framework, to a height of approximately six feet from the bottom of the shaft, was encrusted with mud, indicating a high water line some time during the building history.

Difficult Areas Encountered:

None

Lemongrass Grill

1st Floor and basement, Cedar & Liberty Streets

Cleaning Method: Test 4A - Surface cleaning using industrial HEPA filtered vacuums. Area air filtration utilizing an air filtration device (AFD). Soap and water wet wipe of all horizontal surfaces. **Test 4D** – A/C Duct Cleaning

Equipment Used: Nilfisk™ Vacuum (CFM 127), AFD

Filtration Status: HEPA

Unit Size: 1st floor: 2,451 sq. ft.; 33,134 cu. ft.; basement: 1,080 sq. ft.; 9,720 cu. ft.

AFD Status: Required

AFD Specification: 1000/2000 cfm

Unit Air Exchange Rate: 1st floor: 16.56 min @ 2,000 cfm; basement: 9.72 min @ 1000 cfm

Minimum Air Exchange Required: Every 30 minutes

Unit Description: The restaurant encompasses approximately 3,500 square feet. It has entrances on both Cedar and Liberty Streets. The establishment is comprised of two floors. The first floor is at street level and was used for food service and customer dining. The lower level (basement) was used for food preparation and storage. Gypsum ceilings and hard wood floors are present throughout the dining area. Wood floor joists from the first floor constitute the basement ceiling. The floor is concrete. The dining area is decorated with typical Thai accents consisting of bamboo, and thatch. Grills, ovens, refrigerators, tables, chairs and a bar are on the first floor. The basement contains a walk-in refrigerator, freezers, preparation table, a dishwasher and dry good storage. The establishment's HVAC system is suspended from the ceiling of the first floor. All exterior windows facing the WTC were blown inward depositing significant amounts of dust on all surfaces of the first floor. Minimal dust was present in the basement. Prior to cleaning all tables, chairs, containerized food and accent decorations were disposed of. Restaurant equipment including woks, utensils, pots, pans, and flatware were vacuumed and washed. Bottles of liquor were washed and removed by the owner.

The establishment has one HVAC system. This system provides heating and cooling to the dining area via solid metal supply ducts. The system's return is located in the dining area. A second system provides outdoor makeup air to the cooking stations. Cleaning of this system was performed in accordance with the site-specific HVAC cleaning procedures prepared by Covino Environmental Associates Inc.

Unit 5C - 5th floor, Northwest corner, Liberty Street

Cleaning Method: Test 3A - Surface cleaning with industrial HEPA filtered vacuums. Area air filtration not required. Soap and water wet wipe of all horizontal surfaces.

Test 3B - Surface cleaning with industrial HEPA filtered vacuums. Area air filtration utilizing an air filtration device (AFD). Soap and water wet wipe of all horizontal surfaces.

Equipment Used: Nilfisk™ Vacuum (CFM 127)

Filtration Status: HEPA

Unit Size: 968 sq. ft.; 10,648 cu. ft.

AFD Status: Not Required

AFD Specification: N/A

Unit Air Exchange Rate: 26.62 min @ 400 cfm

Minimum Air Exchange Required: Every 30 minutes

Unit Description: This 968 sq. ft. loft facing the WTC site has three bedrooms. The unit has hardwood floors and no carpeting. All exterior windows had been blown inward. Significant dust and debris had accumulated in the dwelling. All personal items, with the exception of fabric covered furniture, were disposed of prior to cleaning.

Difficult Areas Encountered:

- Hydronic baseboard heating units
- Boarded up window openings
- Cracks and crevices
- The fourth cleaning was necessary as a result of sawdust and debris deposited in areas previously cleaned, by a carpentry crew installing new hardwood flooring. This cleaning was conducted using the Test 3B cleaning method.

Unit 5A - 5th floor, Northeast corner, Cedar Street

Cleaning Method: Test 3B - Surface cleaned using industrial HEPA filtered vacuums. Area air filtration utilizing an air filtration device (AFD). Soap and water wet wipe of all horizontal surfaces.

Equipment Used: Nilfisk™ Vacuum (CFM 127) AFD

Filtration Status: HEPA

Unit Size: 1,404 sq. ft.; 15,444 cu. ft.

AFD Status: Required

AFD Specification: 400/600 cfm

Unit Air Exchange Rate: 25.74 min @ 600 cfm

Minimum Air Exchange Required: Every 30 minutes

Unit Description: This 1,404 sq. ft. loft faces Cedar Street and has one bedroom. The unit has hardwood floors and no carpeting. It had one damaged window. The dwelling was fully furnished and had many personal items all of which were vacuumed, bagged and retained for the tenant. Minimal dust was present in the dwelling except for baseboard heating elements and window sash frames.

Difficult Areas Encountered:

- Owner's possessions required significant effort
- Exterior windows and sashes
- Hydronic baseboard heating units
- Cracks and crevices

Unit 4D - 4th Floor, Northeast corner, Liberty Street

Cleaning Method: Test 2A - Surface cleaning using HEPA filtered vacuums. Air filtration not required. Soap and water wet wipe of all horizontal surfaces

Equipment Used: Craftsman® Shop Vacuum, Hoover® Upright Vacuum

Filtration Status: HEPA

Unit Size: 968 sq. ft.; 9,196 cu. ft.

AFD Status: Not Required

AFD Specifications: N/A

Unit Air Exchange Rate: 22.99 min @ 400 cfm

Minimum Air Exchange Required: Every 30 minutes

Unit Description: This 968 sq. ft. open loft faces the WTC site. The unit has hardwood floors and no carpeting. All exterior windows had been blown inward. Significant dust had accumulated in the dwelling. All personal possessions to be retained by the tenant were vacuumed and bagged.

Difficult Areas Encountered:

- Exterior windows and sashes
- Hydronic baseboard heating units
- Boarded window openings
- Cracks and crevices
- Tenant possessions required special attention

Unit 4C - 4th Floor, Northwest corner, Liberty Street

Cleaning Method: Test 1A - Surface cleaning using non-HEPA filtered vacuums. Area air filtration not required. Soap and water wet wipe of all horizontal surfaces.

Equipment Used: Eureka® Upright Vacuum, Craftsman® Shop Vacuum

Filtration Status: No HEPA

Unit Size: 655 sq. ft.; 6,222 cu. ft.

AFD Status: Not Required

AFD Specification: N/A

Unit Air Exchange Rate: 15.55 min @ 400 cfm

Minimum Air Exchange Required: Every 30 minutes

Unit Description: This 655 sq. ft. open loft faces the WTC site. The unit has hardwood flooring and no carpeting. All exterior windows had been blown inward. Significant dust had accumulated in the dwelling. All personal possessions to be retained by the tenant were vacuumed and bagged.

Difficult Areas Encountered:

- Exterior windows and sashes
- Hydronic baseboard heating units
- Boarded window openings
- Cracks and crevices

Unit 4B - 3rd Floor, Southeast corner, Cedar Street

Cleaning Method: Test 2B - Surface cleaning using HEPA filtered vacuums. Air filtration utilizing an air filtration device (AFD). Soap and water wet wipe of all horizontal surfaces.

Equipment Used: Ridgid® Shop Vacuum, Hoover® Upright Vacuum, AFD.

Filtration Status: HEPA

Unit Size: 968 sq. ft.; 10,164 cu. ft.

AFD Status: Required

AFD Specification: 400/600 cfm

Unit Air Exchange Rate: 22.99 min @ 400 cfm

Minimum Air Exchange Required: Every 30 minutes

Unit Description: This 968 sq. ft. loft facing Cedar Street has four bedrooms. The unit has hardwood floors and no carpeting. All exterior windows were intact. The bedrooms were temporary structures built of particle board which were dismantled prior to cleaning. Minimal dust was present in the dwelling, except for baseboard heating elements and window sash frames.

Difficult Areas Encountered:

- Exterior windows and sashes
- Hydronic baseboard heating units
- Cracks and crevices

Unit 4A - 4th Floor, Southeast corner, Cedar Street

Cleaning Method: Test 2A - Surface cleaning using HEPA filtered vacuums. Area air filtration not required. Soap and water wet wipe of all horizontal surfaces.

Equipment Used: Hoover® Upright Vacuum, Craftsman® Shop Vacuum

Filtration Status: HEPA

Unit Size: 1,368 sq. ft.; 12,996 cu. ft.

AFD Status: Not Required

AFD Specification: N/A

Unit Air Exchange Rate: 21.66 min @ 600 cfm

Minimum Air Exchange Required: Every 30 minutes

Unit Description: This 1,368 sq. ft. open loft faces Cedar Street. The unit has hardwood floors and no carpeting. All exterior windows were intact. Minimal dust was present in the dwelling, except for the baseboard heating elements and window sash frames. All personal and business possessions to be retained by the tenant were vacuumed and bagged.

Difficult Areas Encountered:

- Dwelling used as a business for dressmaking, which resulted in cleaning of excessive amounts of personal and business related items.
- Exterior windows and sashes
- Hydronic baseboard heating units
- Appliances dirty with encrusted grease

Unit 3D - 3rd floor, Northeast corner, Liberty Street

Cleaning Method: Test 1A - Surface cleaning using non-HEPA filtered vacuums. Area air filtration not required. Soap and water wet wipe of all horizontal surfaces.

Equipment Used: Hoover® Upright Vacuum, Ridgid® Shop Vacuum

Filtration Status: No HEPA

Unit Size: 968 sq. ft.; 10,164 cu. ft.

AFD Status: Not Required

AFD Specification: N/A

Unit Air Exchange Rate: 25.41 min @ 400 cfm

Minimum Air Exchange Required: Every 30 minutes

Unit Description: This 968 sq. ft. loft with three bedrooms faces the WTC site. The unit has hardwood floors and no carpeting. All exterior windows had been blown inward. Significant dust had accumulated in the dwelling. All personal items, with the exception of fabric-covered furniture and three pieces of hardwood furniture, were disposed of prior to cleaning.

Difficult Areas Encountered:

- Hydronic baseboard heating units
- Boarded window openings
- Cracks and crevices

Unit 3C - 3rd floor, Northwest corner, Liberty Street

Cleaning Method: Test 1A - Surface cleaning using non-HEPA filtered vacuums. Area air filtration not required. Soap and water wet wipe of all *horizontal and vertical* surfaces.

Test 3B - Surface cleaning with industrial HEPA filtered vacuums. Area air filtration utilizing an air filtration device (AFD). Soap and water wet wipe of all *horizontal and vertical* surface.

Equipment Used: Eureka[®] Upright Vacuum, Craftsman[®] Shop Vacuum

Filtration Status: No HEPA

Unit Size: 655 sq. ft.; 6,877 cu. ft.

AFD Status: Not Required

AFD Specification: N/A

Unit Air Exchange Rate: 17.19 min @ 400 cfm

Minimum Air Exchange Required: Every 30 minutes

Unit Description: This 655 sq. ft. loft with two bedrooms faces the WTC site. The unit has hardwood floors and no carpeting. All exterior windows had been blown inward. Significant dust had accumulated in the dwelling. All personal items with, the exception of fabric-covered furniture, were disposed of prior to cleaning.

Difficult Areas Encountered:

- Hydronic baseboard heating units
- Boarded window openings
- Cracks and crevices

Unit 3B - 3rd floor, Southwest corner, Cedar Street

Cleaning Method: Scope A - Lower Manhattan Cleaning Procedure - Surface cleaning using industrial HEPA filtered vacuums. Area air filtration utilizing an air filtration device (AFD). Soap and water wet wipe of all *horizontal and vertical* surfaces.

Equipment Used: Nilfisk™ Vacuum (CFM 127), AFD

Filtration Status: HEPA

Unit Size: 968 sq. ft.; 10,164 cu. ft.

AFD Status: Required

AFD Specification: 400/600 cfm

Unit Air Exchange Rate: 25.41 min @ 400 cfm

Minimum Air Exchange Required: Every 30 minutes

Unit Description: This 968 sq. ft. loft facing Cedar Street has three bedrooms. All personal items including clothing, kitchenware, books, furniture, and electronic devices were cleaned since the tenants plan to reoccupy the unit. Mattresses and carpets were disposed of. All exterior windows were intact. Minimal dust was present in the space, except for baseboard heating elements and window sash frames.

Difficult Areas Encountered:

- Exterior windows and sashes
- Hydronic baseboard heating units
- Cleaning of small items including CD's, tapes, clothes, shoes, kitchenware, etc.
- Cracks and crevices

Unit 2B - 2nd floor, Southwest corner, Cedar Street

Cleaning Method: Test 3A - Surface cleaning using industrial HEPA filtered vacuums.

Area air filtration not required. Soap and water wet wipe of all horizontal surfaces.

Equipment Used: Nilfisk™ Vacuum (CFM 127)

Filtration Status: HEPA

Unit Size: 946 sq. ft.; 9,460 cu. ft.

AFD Status: Not Required

AFD Specifications: N/A

Unit Air Exchange Rate: 23.65 min @ 400 cfm

Minimum Air Exchange Required: Every 30 minutes

Unit Description: This 946 sq. ft. loft facing Cedar Street has two bedrooms. The unit contains hardwood floors and no carpeting. All exterior windows were intact. Minimal dust was present in the dwelling except for baseboard heating elements and window sash frames. All personal items, with the exception of fabric-covered furniture, were disposed of prior to cleaning.

Difficult Areas Encountered:

- Exterior windows and sashes
- Hydronic baseboard heating units
- Cracks and crevices

Unit 2A – 2nd floor, Southeast corner, Cedar Street

Cleaning Method: Test 1B - Surface cleaning using non-HEPA filtered vacuums. Area air filtration utilizing an air filtration device (AFD). Soap and water wet wipe of all horizontal surfaces.

Equipment Used: Hoover[®] Upright, Ridgid[®] Shop Vacuum, AFD.

Filtration Status: No HEPA

Unit Size: 1,335 sq. ft.; 13,350 cu. ft.

AFD Status: Required

AFD Specification: 400/600 cfm

Unit Air Exchange Rate: 22.25 min @ 600 cfm

Minimum Air Exchange Required: Every 30 minutes

Unit Description: This 1,335 sq. ft. loft facing Cedar Street has two bedrooms. The unit has hardwood floors and no carpeting. All exterior windows were intact. Minimal dust was present in the dwelling, except for baseboard heating elements and window sash frames. All personal items were disposed of, with the exception of fabric-covered furniture and kitchenware, prior to cleaning.

Difficult Areas Encountered:

- Exterior windows and sashes
- Hydronic baseboard heating units
- Cracks and crevices

Unit 3A - 3rd floor, Southeast corner, Cedar Street

Cleaning Method: Test 2B - Surface cleaning using HEPA filtered vacuums. Area air filtration utilizing an air filtration device (AFD). Soap and water wet wipe of all horizontal surfaces.

Equipment Used: Eureka® Upright, Craftsman® Shop Vacuum and AFD.

Filtration Status: HEPA

Unit Size: 1,368 sq. ft.; 14,364 cu. ft.

AFD Status: Required

AFD Specification: 400/600 cfm

Unit Air Exchange Rate: 23.94 min @ 600 cfm

Minimum Air Exchange Required: Every 30 minutes

Unit Description: This 1,368 sq. ft. loft facing Cedar Street is utilized as office space for the Baldwin Realty Company. Carpeting covers half the floor space. The remainder is hardwood flooring. All exterior windows were intact. Minimal dust was present in the space, except for baseboard heating elements and window sash frames. The space is furnished with office equipment including desks, chairs, file cabinets, and tables.

Difficult Areas Encountered:

- Exterior windows and sashes
- Recessed lighting
- Fireplace interior
- Cracks and crevices
- Hydronic baseboard heating units

Synopsis of Cleaning Methods by Building Area

Residential Apartments and Common Areas

Unit 2A. Test: 1B- Ridgid® shop vacuum, Hoover® upright, AFD, no HEPA. Soap and water wet wipe of all horizontal surfaces. This 1,335 sq. ft. loft with one bedroom faces Cedar Street. Hardwood floors, no carpet, no windows blown in, all personal items disposed except for a couch and chairs. Minimal dust accumulation in dwelling except for baseboard heating elements.

Unit 2B. Test: 3A- Industrial HEPA-filtered vacuum, no AFD. Soap and water wet wipe of all horizontal surfaces. This 946 sq. ft. loft with 2 separate bedrooms faces Cedar Street. Hard wood floors, no carpet, no windows blown in, all personal items except a couch, disposed of prior to cleanup. Minimal dust accumulation in dwelling except for baseboard heating elements.

Second Floor Hallway. Test: 4A- Industrial HEPA-filtered vacuum, AFD. Test: 4B- Soap and water wet wipe of all *horizontal and vertical* surfaces (this hallway, ceiling and floors only). Vinyl tiles on floor, sheet rock walls covered with wall paper glue, painted sheet rock ceiling. Minimal dust accumulation.

Unit 3A. Test: 2B- Craftsman® shop vacuum, Eureka® upright, HEPA and AFD. Soap and water wet wipe of all horizontal surfaces. This 1,368 sq. ft. loft (utilized as office space for Baldwin Reality) faces Cedar Street. Carpet is present on half the floor space; the remainder is hardwood floors. No windows blown in. The area is furnished with 10 - 12 wood desks, files and office equipment. Minimal dust accumulation in dwelling.

Unit 3B. Scope A- Lower Manhattan Cleaning Procedure: Industrial HEPA-filtered vacuums, AFD. Soap and water wet wipe of all *horizontal and vertical* surfaces. This 968 sq. ft. loft with three bedrooms faces Cedar Street. Tenants plan to reoccupy dwelling, therefore personal items except for mattresses, carpet and magazines remained for cleaning. No windows blown in, hardwood floors, area completely furnished, tenants clothes present. Minimal dust accumulation in dwelling except for baseboard heating units.

Unit 3C. Test: 1A- Craftsman® shop vacuum, Eureka® upright, no HEPA, no AFD. Soap and water wet wipe of all *horizontal and vertical* surfaces. Test: 3B- Industrial HEPA-filtered vacuum, AFD, and soap and water wet wipe of all *horizontal and vertical* surfaces. This 655 sq. ft. loft with two bedrooms faces ground zero. Hardwood floors, windows blown in, no carpet, nearly all personal items disposed of prior to clean up. Significant accumulation of dust in dwelling.

Unit 3D. Test: 1A- Ridgid® shop vacuum, Hoover® upright, no HEPA, no AFD. Soap and water wet wipe of all horizontal surfaces. This 968 sq. ft. loft with three bedrooms faces ground zero. Hardwood floors, windows blown in, no carpet, all personal items except for three pieces of hardwood furniture disposed of. Significant accumulation of dust in dwelling.

Third Floor Hallway. Test: 4A- Industrial HEPA-filtered vacuums, AFD. Test: 4B- Soap and water wet wipe of all *horizontal and vertical* surfaces (this hallway, ceiling only). Plywood floors, sheet rock walls covered with wall paper glue, painted sheet rock ceiling. Minimal dust accumulation.

Unit 4A. Test: 2A- Craftsman® shop vacuum, Hoover® upright, HEPA, no, AFD. Soap and water wet wipe of all horizontal surfaces. This 1,368 sq. ft. open loft, faces Cedar Street. Hardwood floors, no windows blown in, all personal items removed prior to cleanup. Minimal dust accumulation in dwelling except for baseboard heating units.

Unit 4B. Test: 2B- Ridgid® shop vacuum, Hoover® upright, HEPA, AFD. Soap and water wet wipe of all horizontal surfaces. This 968 sq. ft. loft with 4 bedrooms faces Cedar Street. Personal items cleaned then bagged. Hardwood floors, no blown in windows. Minimal dust accumulation in dwelling except for baseboard heating units.

Unit 4C. Test: 1A- Craftsman® shop vacuum, Eureka® upright, no HEPA, no AFD. Soap and water wet wipe of all horizontal surfaces. This 655 sq. ft. open loft faces ground zero. Personal items cleaned then bagged. No carpet, hardwood floors, windows blown in. Significant accumulation of dust in dwelling.

Unit 4D. Test: 2A- Ridgid® shop vacuum, Eureka® upright, HEPA, no AFD. Soap and water wet wipe of all horizontal surfaces. This 968 sq. ft. open loft faces ground zero. Personal items cleaned then bagged. Hardwood floors, windows blown in. Significant accumulation of dust in dwelling.

Fourth Floor Hallway. Test: 4A- Industrial HEPA-filtered vacuum, AFD. Test: 4B- Soap and water wet wipe of all *horizontal and vertical* surfaces (this hallway, ceiling only). Plywood floors, sheet rock walls covered with wallpaper glue, painted sheet rock ceiling. Minimal dust accumulation.

Unit 5A. Test: 3B- Industrial HEPA-filtered vacuum, AFD. Soap and water wet wipe of all horizontal surfaces. This 1,404 sq. ft. loft with one bedroom faces Cedar Street. Personal items cleaned then bagged. Hardwood floors, no carpet, one blown in window. Minimal dust accumulation in dwelling except for baseboard heating units.

Unit 5C. Test: 3A- Industrial HEPA-filtered vacuum, no AFD. Soap and water wet wipe of all horizontal surfaces. Test: 3B- Industrial HEPA-filtered vacuum, AFD. Soap and water wet wipe of all horizontal surfaces. This 968 sq. ft. loft with three bedrooms faces ground zero. Hardwood floors, no carpet, all personal items removed, windows blown in. Significant accumulation of dust in dwelling.

Unit 5D. Test: 3B- Industrial HEPA-filtered vacuum, AFD. Soap and water wet wipe of all horizontal surfaces. This 1,024 sq. ft. open loft faces ground zero. All personal items removed prior to cleaning. Windows blown in, hardwood floors, no carpet. Significant accumulation of dust in dwelling.

Fifth Floor Hallway. Test: 4A- Industrial HEPA-filtered vacuum, AFD. Test: 4B- Soap and water wet wipe of all *horizontal and vertical* surfaces (this hallway, ceiling only). Plywood floors, sheet rock walls covered with wallpaper glue, painted sheet rock ceiling. Minimal dust accumulation.

Liberty Street Staircase. Test: 4A- Industrial HEPA-filtered vacuum, AFD. Test: 4B- Soap and water wet wipe of all *horizontal and vertical* surfaces. Cast concrete steps/landings, sheet rock walls and ceiling. All surfaces covered with gloss paint. Minimal dust accumulation.

Cedar Street Staircase. Test: 4A- Industrial HEPA-filtered vacuum, AFD. Test: 4B- Soap and water wet wipe of all *horizontal and vertical* surfaces. Wood steps/landings, sheet rock walls and ceiling. Floor covered with vinyl tiles, walls and ceilings covered with gloss paint. Minimal dust accumulation.

Commercial Units

Chiropractor's Office. Test: 4A- Industrial HEPA-filtered vacuums, AFD. Test: 4B- Soap and water wet wipe of all *horizontal and vertical* surfaces. Test: 4C- Carpet cleaning using a commercial carpet wet vacuum with warm water. Test: 4D- A/C Duct Cleaning. Test: 4E- Cleaning of bathroom tile floor and desk top wet wipe using water only. This 716 sq. ft. office space with 4 examination rooms faces ground zero. All front windows were blown in. Excessive amounts of dust present on all horizontal and vertical surfaces. Floor areas covered with wall-to-wall carpeting; suspended ceiling covered with fibrous tiles. A two foot high void space was above ceiling. Ceiling tiles, flexible ventilation ducts and office equipment were removed and disposed of prior to cleaning. Void space contained HVAC system, and wood floor joist system for third floor apartment. This area contained WTC-related and non-WTC-related dust. The space was extremely difficult to clean due to the present of electrical wires, recessed lighting fixtures, sprinkler systems and the dry friable nature of the wood support system.

Mattress Store. Test: 4A- Industrial HEPA-filtered vacuums, AFD. Test: 4B- Soap and water wet wipe of all *horizontal and vertical* surfaces. Test: 4C- Carpet cleaning using a commercial carpet wet vacuum with a warm water shampoo solution. Test: 4D- A/C Duct Cleaning.

Test: 4E- Cleaning of vinyl floor tile and window ledge wet wipe using water only. This 968 sq. ft. open space faces ground zero. All front windows blown in, excessive amounts of dust present on all horizontal surfaces. Floor areas covered with wall-to-wall carpeting and approximately 25 display mattresses and box springs. Ceiling tiles, mattresses, office equipment and flexible ventilation ducts removed and disposed of prior to cleanup. Void space above suspended ceiling exhibited same characteristics as in the Chiropractor's office.

Basement

Elevator Shaft/Compactor Room. Test: 4A- Industrial HEPA-filtered vacuum, AFD. Soil floor in elevator shaft, concrete floor in compactor room. Cinderblock walls, exposed floor joists.

Commercial Units (Non-Study)

Lemongrass Grill. Test: 4A-Industrial HEPA-filtered vacuum, AFD. Test 4D- A/C Duct Cleaning. This 3,500 sq. ft. unit has two floors. The first floor is at street level with entrances from both Liberty and Cedar Streets. The lower level (basement) was used for food preparation and storage. Gypsum ceilings and hard wood floors are present throughout the dining area. Wood floor joists from the first floor constitute the basement ceiling. The floor is concrete. The dining area is decorated with typical Thai accents consisting of bamboo and thatch. Grills, ovens, refrigerators, tables, chairs and a bar are on the first floor. The basement contains a walk-in refrigerator, freezers, preparation table, a dishwasher and dry good storage. The establishment's HVAC system is suspended from the ceiling of the first floor. All exterior windows facing the WTC were blown inward, depositing significant amounts of dust on all surfaces of the first floor. Minimal dust was present in the basement. Prior to cleaning, all tables, chairs, containerized food and accent decorations were disposed. Restaurant equipment including woks, utensils, pots, pans and flatware were vacuumed and washed.

The Food Exchange. Test: 4A- Industrial HEPA-filtered vacuum, AFD. Test 4D- A/C Duct Cleaning. This 5,000 sq. ft. unit has three floors. The first floor is at street level with entrances from both Liberty and Cedar Streets. This floor was used for food service and customer dining. The lower level (basement) was used for food preparation and storage. The third level (sub-basement) was used for storage of restaurant equipment. Ceramic tile covers the floor area in both the dining room and the basement. The floor of the sub-basement is packed soil. All exterior windows had been blown inward depositing significant amounts of dust on all surface areas of the first floor. Minimal dust was present in the basement. The first floor ceiling by the Liberty Street entrance is made of gypsum board. The ceiling on the Cedar Street entrance consists of suspended acoustical tile covered with a decorative tin facing. Above the suspended ceiling is a two foot void space that houses the HVAC system for the establishment. The basement ceiling is a suspended fibrous tile ceiling. The void space above both suspended ceilings and the gypsum ceiling contained both WTC-related and non-WTC-related dust. Asbestos pipe insulation was present in the void space of the basement. Grills, refrigerators, tables and chairs are present on the first floor. The basement contains walk-in refrigerators, preparation tables, stoves, dishwashing areas and dry good storage. Prior to cleaning, all open and bulk stored food; fibrous ceiling tiles in the basement; and wrap insulation that had surrounded the HVAC systems were disposed of. The HVAC system is located in the void space above the dining room ceiling.

The Barber Shop. Test: 4A- Industrial HEPA-filtered vacuum, AFD. Test 4E- Water wet wipe of all horizontal and vertical surfaces. This 1,268 sq. ft. open space facing the WTC Site is located below grade to Liberty Street. The front door of the business was blown inward depositing significant amounts of dust and debris down the staircase into the rental space. Floor areas were covered with ceramic tiles; the ceiling is a suspended system using fibrous tiles. Above the suspended ceiling is a void space which accommodates flexible A/C ducts, electrical conduit and lights. All structural support members above the ceiling were encapsulated with a non-asbestos insulating material. Equipment including chairs, wash sinks, counters and hair care displays were located in the shop. The head space above the entrance door houses an A/C condenser/compressor unit that was heavily impacted with WTC contaminated dust and debris. Ceiling tiles, flexible duct, chairs, display shelving and hair care merchandise were disposed of prior to cleaning. Ancillary rooms are adjacent to the shop space that extends under Liberty Street. These rooms have earthen floors and are believed to be associated with utility companies. They were not cleaned.

Exterior A/C Condenser/Compressor Units

A/C Condenser/Compressor Units. Test: 2A- Craftsman® shop vacuum, HEPA, no AFD. Three commercial condenser/compressor units and four residential condenser/compressor units were inspected to determine if they required cleaning of WTC-related dust. No significant dust was present on the exterior and interior surfaces of the four residential units. It is believed that the condenser/compressor units were cleaned prior to the study, by contractors retained by the owner, to remove dust and debris from the building roof. The three commercial condenser/compressor units had minimal to moderate WTC-related dust/debris.

Fact Sheets

Exterior A/C Condenser/Compressor Units

Three commercial size condenser/compressor units and one cooling tower are located on the atrium roof and four residential size condenser/compressor units are located on the 5th floor roof.

Cleaning Method: Test 2A - Surface cleaning utilizing a vacuum equipped with HEPA filtration.

Equipment Used: Craftsman® Shop Vacuum

Filtration Status: HEPA

Unit Size: N/A

AFD Status: Not Required

AFD Specifications: N/A

Unit Air Exchange Rate: N/A

Minimum Air Exchange Required: N/A

Description: Three condenser/compressor units and four residential condenser/compressor units were inspected to determine if they required cleaning of WTC-related dust. No significant dust was present on the exterior and interior surfaces of the four residential units. It is believed that the condenser/compressor units were cleaned prior to the pilot, by contractors retained by the owner, to remove dust and debris from the building roof. The three commercial condenser/compressor units had minimal to moderate WTC related dust/debris.

Units Inspected but not Cleaned:

The four condenser/compressor units for dwellings 3A, 5A, 5C, and 5D require no cleaning.

Units Cleaned:

- The Food Exchange restaurant cooling tower located on the building atrium roof
- THAI Restaurant condenser/compressor unit located on the atrium roof
- Commercial Unit 1, Chiropractors office, condenser/compressor unit
- Commercial Unit 2, Mattress showroom, condenser/compressor unit

Difficult Areas Encountered:

None

Mattress Store

2nd Floor, Northwest corner, Liberty Street

Cleaning Methods: Test

4A - Area air filtration utilizing an air filtration device (AFD). Surface cleaning using a vacuum equipped with HEPA filtration. Nilfisk® Vacuum (CFM 127), AFD

4B - Surface cleaning of horizontal and vertical surfaces using a wet wipe with soap and water.

4C - Carpet cleaning using a commercial carpet wet vacuum with a warm water shampoo solution. "Carpet Express" (Model C-4)

4D - A/C Duct Cleaning. One A/C system located above the suspended ceiling supplies the showroom with air conditioning. The system has two central return grills located under and adjacent to the air handler. All flexible duct lines were removed and disposed of. Supply diffusers and return grills were removed for cleaning and reinstalled. A professional HVAC cleaning company was contracted to clean the HVAC system in accordance with the following work outline.

- The workspace was protected using plastic and tape immediately under the duct system and in proximity of the working equipment.
- Diffusers and return grills were removed.
- Diffusers and return grills were treated with a degreasing agent.
- The distribution duct was sealed with a protective barrier to prevent blow back of debris.
- Diffusers and return grills were washed of degreasing agent and sanitized.
- The distribution duct and surrounding areas were HEPA vacuumed.
- The distribution duct openings degreased and sanitized.

4E - Surface cleaning of horizontal and vertical surfaces consisting of wet wipe using water only (vinyl floor tile and window ledge).

Equipment used: Nilfisk® Vacuum (CFM 127), AFD; Carpet wet vacuum, (Model C-4)

Filtration status: HEPA

Unit Size: 946 sq. ft.; 9,460 cu. ft.

AFD Status: Required under methods A and D

AFD specification: 400/600 cfm

Unit air exchange rate: 23.65 min @ 400 cfm

Minimum Air Exchange Required: Every 30 minutes

Unit Description: This 968 sq. ft. mattress showroom faces the WTC Site. An exterior window wall had been blown inward, depositing significant amounts of dust throughout the showroom. Approximately twenty-five mattresses were on display in the showroom. Floor areas were covered with wall-to-wall carpet and padding. A two-foot void space is located above the suspended fibrous tile ceiling. The void space contains an A/C air handling system that is suspended from the wood floor joist construction of the 3rd floor unit. The void space accommodates the sewer drain pipe, electrical and telephone wires, A/C system duct work, and lighting and fire protection systems. The void space contained dust both related to and not related to the WTC attack. Ceiling tiles, flexible ducts, furniture, and display items were disposed of prior to cleaning.

Mattress Store - Continued

Difficult Areas Encountered:

- Ceiling void space was cluttered with utilities.
- The wood structural members above the void space were porous and flaking.
- Minimal space was available in the void space making it difficult to work.
- Hydronic baseboard heating units were difficult to clean using vacuum equipment only.
- Wall-to-wall carpeting was difficult to clean thoroughly.
- Frequent clogging of vacuum filtration systems occurred due to the quantity of dust.

Chiropractor's Office

2nd Floor, Northwest corner, Liberty Street

Cleaning Methods: Test

4A - Area air filtration utilizing an air filtration device (AFD). Surface cleaning utilizing an industrial vacuum equipped with HEPA filtration. NilfiskTM Vacuum (CFM 127), AFD.

4B - Surface cleaning of horizontal and vertical surfaces using a wet wipe with soap and water.

4C - Carpet cleaning using a commercial carpet wet vacuum with warm water Carpet ExpressTM (Model C-4)

4D - A/C Duct Cleaning. One air handling system located above the suspended ceiling supplies interior offices with air conditioning. The system has a central return grill located under the air handler. All flexible duct lines were removed and disposed of. Supply diffusers and return grills were removed for cleaning and reuse. A professional HVAC cleaning company was contracted to clean the HVAC system in accordance with the following work outline:

- The work area immediately under the A/C system was protected using plastic sheeting.
- Diffusers and return grills were cleaned with a degreasing agent.
- Openings in the distribution duct were sealed with a protective barrier to prevent debris blow back.
- Distribution ducts were cleaned using mechanical brushes under negative air and HEPA filtration, then washed with a degreasing agent.
- The blower unit was washed with a degreaser, and the residues were removed using a vacuum.
- All distribution ducts were fogged with a biocide, then encapsulated with an FDA approved sealer.

4E - Surface cleaning of horizontal and vertical surfaces consisting of wet wipe using water only (bathroom floor and desk top).

Equipment Used: Nilfisk[®] Vacuum (CFM 127); AFD; Carpet wet vacuum, (Model C-4)

Filtration Status: HEPA

Unit Size: 836 sq. ft.; 8,360 cu. ft.

AFD Status: Required under method A and D

AFD Specifications: 400/600 cfm

Unit Air Exchange Rate: 20.9 min @ 400 cfm

Minimum Air Exchange Required: Every 30 minutes

Chiropractor's Office – Continued

Unit description: This 716 sq.ft. commercial office space with four examination rooms faces the WTC site. All front windows had been blown inward, depositing significant amounts of dust and debris throughout the unit. Floor areas were covered with wall-to-wall carpet and padding. A two-foot void space is located above the suspended fibrous tile ceiling. The void space contains an A/C system suspended from the wood floor joist construction of the 3rd floor unit. The space accommodates sewer drain pipes, electrical and telephone wires, A/C system duct work, and lighting and fire protection systems. The void space contained dust both related and not related to the WTC attack. Ceiling tiles, flexible duct and office equipment were removed and disposed of prior to cleaning.

Difficult Areas Encountered:

- The ceiling void space was cluttered with utilities.
- The wood structural members above the void space were porous and flaking.
- Minimal space was available in the void spaces, making it difficult to work efficiently.
- The hydronic baseboard heating units were difficult to clean.
- The wall-to-wall carpeting was difficult to clean thoroughly.
- Frequent clogging of vacuum filtration systems occurred due to the quantity of dust.

Common Areas

Vestibule, Elevator, Stairwells, Hallways, Utility Rooms, Trash Chute Accesses and Laundry Room.

Cleaning Method: Test 4A, 4B - Surface cleaning using industrial filtered vacuums. Air filtration utilizing an air filtration device (AFD). Soap and water wet wipe of all *horizontal and vertical* surfaces.

Equipment Used: Nilfisk™ Vacuum (CFM 127), AFD.

Filtration Status: HEPA

Unit Size:	Four Levels Total:	2,556 sq. ft.; 30,492 cu. ft.
	Hallways (per level)	639 sq. ft.; 7,623 cu. ft.
	Vestibule	150 sq. ft.; 1,500 cu. ft.
	Elevator Compartment	48 sq. ft.; 384 cu. ft.
	Laundry Room	(Included as hallway)
	Utility Rooms	(Included as hallway)

AFD Status: Required

AFD Specifications: 400/600 cfm

Unit Air Exchange Rate: 19.5 min at 400 cfm (hallway)

Minimum Air Exchange Required: Every 30 minutes

Description: The vestibule is located on Cedar Street and provides access to the building's only elevator and one stairwell. A second stairwell is accessed from Liberty Street. Four hallways connect the two stairwells and elevator access point on each floor (2nd floor to 5th floor). Each hallway contains a utility room with a trash chute access. The laundry room is located off of the 2nd floor hallway. The common areas contain no porous building material. All walls and ceilings in the stairwells are painted. Carpeting is not present in any of the common areas. Minimal dust was observed in the common areas.

Difficult Areas Encountered:

- The common areas were used daily by all individuals working in the building. These areas were frequently damp mopped to control the migration of dust.
- Dust accumulations were heavy at the base of the walls where the baseboard trims were removed.
- Hallway walls were vacuumed, but not wet wiped as a result of wallpaper paste residue left when the wallpaper was removed prior to the pilot study.

Barber Shop

This unit is located in the basement.

Cleaning Method: Test 4A - Surface cleaning using industrial HEPA filtered vacuums. Area air filtration utilizing an air filtration device (AFD). **Test 4E** - Water wet wipe of all *horizontal and vertical* surfaces.

Equipment Used: Nilfisk™ Vacuum (CFM 127), AFD.

Filtration Status: HEPA

Unit Size: 1,268 sq. ft.; 15,216 cu. ft.

AFD Status: Required

AFD Specification: 400/600 cfm

Unit Air Exchange Rate: 25.36 min @ 600 cfm

Minimum Air Exchange Rate: Every 30 minutes

Unit Description: This 1,268 sq. ft. open space facing the WTC Site is located below grade to Liberty Street. The front door of the business was blown inward depositing significant amounts of dust and debris down the staircase into the rental space. Floor areas are covered with ceramic tiles; the ceiling is a suspended system using fibrous tiles. Above the suspended ceiling is a void space which accommodates flexible A/C ducts, electrical conduit and lights. All structural support members above the ceiling are encapsulated with a non-asbestos insulating material. Equipment including chairs, wash sinks, counters and hair care displays are located in the shop. The headspace above the entrance door houses an A/C condenser/compressor unit that was heavily impacted with WTC contaminated dust and debris. Ceiling tiles, flexible duct, chairs, display shelving and hair care merchandise were disposed of prior to cleaning. Adjacent to the shop space are ancillary rooms that extend under Liberty Street. These rooms have earthen floors and are believed to be associated with utility companies. They were not cleaned.

Difficult Areas Encountered:

- Sprayed-on insulation/fire protection applied to structural members in the void space above the suspended ceiling prevented effective vacuuming of the area.
- Significant quantities of WTC dust and debris were deposited into the remote A/C condenser/compressor unit and associated housing.
- The space above the fixed ceiling at the entrance to the Barber Shop stairwell was heavily impacted, requiring special preparation for access and removal of bulk quantities of WTC dust/debris.

The Food Exchange

1st floor, basement and sub-basement Cedar & Liberty Street

Cleaning Method: Test 4A - Surface cleaning using industrial HEPA filtered vacuums. Area air filtration utilizing an air filtration device (AFD). Soap and water wet wipe of all horizontal surfaces.

Equipment Used: NilfiskTM Vacuum (CFM 127), AFD

Filtration Status: HEPA

Unit Size: 1st floor- 2,324 sq. ft.; 31,606 cu. ft.; basement- 2,596 sq. ft.; 36,344 cu. ft.

AFD Status: Required

AFD Specification: 400/600 cfm

Unit air exchange rate: 1st floor 15.80 min @ 2000 cfm, basement 18.17 min @ 2000 cfm.

Minimum Air Exchange Required: Every 30 minutes

Unit Description: The restaurant encompasses approximately 5,000 square feet. It may be entered from either a Cedar Street or a Liberty Street entrance. The establishment is comprised of three floors. The first floor is at street level. This floor was used for food service and customer dining. The lower level (basement) was used for food preparation and storage. The third level (sub-basement) was used for storage of restaurant equipment. Ceramic tile covers the floor area in both the dining room and the basement. The floor of the sub-basement is packed soil. All exterior windows had been blown inward depositing significant amounts of dust on all surface areas of the first floor. Minimal dust was present in the basement. The first floor ceiling by the Liberty Street entrance is made of gypsum board. The ceiling on the Cedar Street entrance consists of suspended acoustical tile covered with a decorative tin facing. Above the suspended ceiling is a two-foot void space that houses the HVAC system for the establishment. The basement ceiling is a suspended fibrous tile ceiling. The void space above both suspended ceilings and the gypsum ceiling, contained both WTC related and non-WTC related dust. Asbestos pipe insulation was present in the void space of the basement. Grills, refrigerators, tables and chairs are present on the first floor. The basement contains walk-in refrigerators, preparation tables, stoves, dishwashing areas, and dry good storage. Prior to cleaning, all open and bulk stored food, fibrous ceiling tiles in the basement, and wrap insulation that had surrounded the HVAC systems, were disposed of. The HVAC system located in the void space above the dining room ceiling consists of two air handlers that provide heat or cooling to the first floor via separate solid metal supply ducts. The system return is from the dining area and void space located above the first floor. Cleaning of this system was performed by a subcontractor in accordance with a site-specific scope of work prepared by Covino Environmental Associates Inc.

The Food Exchange - Continued

Difficult Areas Encountered:

- The ceiling void space was cluttered.
- The wood structural members above void space were porous and flaking.
- Asbestos pipe wrap insulation was present in void space.
- Removal of ceiling tiles created dusty conditions.
- Insect and rodent infestations created unpleasant work conditions.
- Frequent clogging of vacuum filtration systems occurred due to the quantity of dust and rodent droppings.

Difficult Areas Encountered:

- Approximately 200 lbs. of spoiled fish, meat and poultry were removed from freezers and refrigerators.
- There was encrusted grease on, and adjacent to, all cooking surfaces, stove exhaust systems and floor areas.
- Wood structural members in the basement preparation area were porous and flaking.
- Insect and rodent infestations created unpleasant work conditions.
- Frequent clogging of vacuum filtration systems occurred due to the quantity of dust and rodent droppings.

Unit 5D - 5th floor, Northeast corner, Liberty Street

Cleaning Method: Test 3B - Surface cleaning using industrial HEPA filtered vacuums. Area air filtration utilizing an air filtration device (AFD). Soap and water wet wipe of all horizontal surfaces.

Equipment Used: Nilfisk™ Vacuum (CFM 127), AFD

Filtration Status: HEPA

Unit Size: 968 sq. ft.; 10,648 cu. ft.

AFD Status: Required

AFD Specification: 400/600 cfm

Unit Air Exchange Rate: 26.62 min @ 400 cfm

Minimum Air Exchange Required: Every 30 minutes

Unit Description: This 968 sq. ft. open loft faces the WTC Site. The unit has hardwood floors and no carpeting. All exterior windows had been blown inward depositing significant amounts of dust and debris throughout the dwelling. All personal items were disposed of prior to the cleanup. Significant dust was accumulated in the dwelling.

Difficult Areas Encountered:

- Hydronic baseboard heating units
- Boarded up window openings
- Cracks and crevices